

## **ANNOUNCEMENT FOR THE AWARD OF A RESEARCH FELLOWSHIP**

27/ECUM/CFUM/2023; 2 vacancies

A call for applications is now open for the attribution of 2 (two) research grant(s) within the scope of the R&D project UIDP/04650/2020, financed by national funds of the Physics Center of the Universities of Minho and Porto (CF-UM-UP) of University of Minho), through the Foundation for Science and Technology (FCT), under the following conditions:

**Scientific Area:** Optometry and Vision Sciences

**Recipient category:** Students enrolled in an Integrated Master's degree or a Master's degree course in the areas of Optometry and Vision Sciences, Informatics, Biophysics and Bionanosystems, or other areas that fit into the projects described below.

### **Requirement for granting the fellowship:**

- The applicants may apply without prior registration in the course for which the fellowship is open. The requirement to enroll in a degree course or non-academic degree course will be verified on the date of contracting the fellowship;
- Only fellowships whose selected applicants present a valid proof of enrollment in a degree course or non-academic degree course will be contracted, according to the type of the fellowship, issued by the academic services of the Higher Education Institution, indicating, respectively, the academic year or its duration (star and term).
- Enrollment in non-certified courses (without curricular units) will not be considered as proof of enrollment.

**Candidates profile:** The candidate must have a profile that fits the research activities foreseen in the research project(s) to which is applying. The 3 (three) projects that are in the competition are listed below and where the target audience for each project is also presented.

**Applicants eligibility:** Applicants must comply with the eligibility conditions laid down in article 9 of the Research Grants Regulation of the Portuguese Foundation for Science and Technology (2019).

**Workplan and objectives to be achieved:** It is intended that the fellows collaborate in the research activities of the CFUM-UM-UP, integrating one of the projects whose description and respective supervisors are indicated below. Candidates must mention up to 3 (three) references of projects they are applying for, in descending order of preference, chosen from among the following 9 (nine) proposals:

**Project BI2023-1:** Impact of virtual reality on the visual system

**Supervisor(s):** Sandra Maria Braga Franco, sfranco@fisica.uminho.pt

**Target:** Master students in Optometry and Vision Sciences

**Description:** The growing popularity of virtual reality (VR) games has raised questions about their effect on the visual system, namely accommodation and convergence.

As is known, accommodation and vergence mechanisms are linked and occur simultaneously. The demand placed on these mechanisms by VR systems results in a decrease in visual performance due to the ocular discomfort that arises. In addition, discomfort in stereoscopic visualization is caused by the need for rapid adaptation of the vergence system to a different distance from that required by the accommodation mechanism.

**Project BI2023-2:** Computational implementation and use of a system used to analyze the colorimetric quality of illumination

**Supervisor(s):** Madalena Lira, Universidade do Minho, [mlira@fisica.uminho.pt](mailto:mlira@fisica.uminho.pt) e Beatriz Remeseiro, Universidad de Oviedo, [bremeseiro@uniovi.es](mailto:bremeseiro@uniovi.es)

**Target:** Students in the Master of Advanced Optometry equivalent

**Description:** Computer vision syndrome causes vision problems and discomfort mainly due to dry eye. Several studies show that dry eye in computer users is caused by a reduction in the blink rate and an increase in the prevalence of incomplete blinks.

Recently it was developed a new eye blink detection method that evaluates three different 5 tasks: blink detection, blink completeness detection, and eye state detection.

The objective of this work will be to carry out a study that allows to clinically demonstrate the usefulness of the method described above.

From the automatic method of evaluating blinking, we intend to obtain some parameters from the literature that are relevant for the characterization of dry eye (for example, frequency of blinking, duration, etc.). It is also intended to assess the existence of relationships between these parameters and sex, age, time of day when the video is made, activity being carried out (for example, working on the computer, reading PDF, watching a series, etc.) as well as other parameters of the tear film.

### **Other relevant information**

Study to be developed based on the method developed in the article published: Gonzalo de la Cruz , Madalena Lira , Oscar Luaces , and Beatriz Remeseiro, "Eye-LRCN: A Long-Term Recurrent Convolutional Network for Eye Blink Completeness Detection" na revista IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS 2022. Available on-line: <https://ieeexplore.ieee.org/document/9885029>

**Project BI2022-3:** Development and implementation of a software application to aid in the diagnosis and treatment of binocular vision dysfunctions

**Supervisor(s):** Miguel Faria Ribeiro, [mribeiro@fisica.uminho.pt](mailto:mribeiro@fisica.uminho.pt)

**Target:** Master's students with degrees in Optometry and Vision Science

**Description:** Diabetes mellitus is the most prevalent endocrine disease in developed countries. In people with diabetes, in addition to vision loss caused by diabetic retinopathy, transient visual disturbances often caused by refractive changes may occur. These refractive state changes are associated with variations in blood glucose levels, but the underlying mechanism is still not fully understood. Some studies have shown that increased blood sugar leads to a refractive shift in the myopic direction, while others have shown that such a shift can occur in the

hyperopic direction. Changes in visual acuity in patients with diabetes can be an indicator of inadequate metabolic control or even the first sign of diabetes mellitus.

With this thesis, we intend to carry out current research on the magnitude, temporal duration and variability of refractive changes in individuals with different degrees of diabetes mellitus. The main objective will be to relate the concentration of glucose in the blood with the refractive alterations.

**Other relevant information:** This thesis aims to provide the student with knowledge and tools in the field of visual and ophthalmic optics that allow him to expand his employability opportunities.

**Applicable legislation and regulations:** Research Fellowship Holder Statutes, approved by Law no. 40/2004 of August 18, in its current version published by Decree-Law no. 123/2019 of August 28; Regulation of Scientific Research Fellowships of the University of Minho (RBIC), published in “Diário da República”, 2nd serie, no. 119, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021 and Regulation of Research Studentships and Fellowships (RBI) of the Foundation for Science and Technology, I.P. - in force.

**Host/Contracting institution and scientific supervision:** The workplan will be carried out in the Centre of Physics, School of Sciences of University of Minho, located in the campus of Gualtar, Braga, under the scientific supervision of the Professor/Doctor proponent of the project for which the candidate was selected.

**Fellowship duration:** The grant will take place for a period of 6 (six) months, with a provisional starting date on June 2023, eventually renewed.

**Amount of the research grant:** The value stipend (Monthly Maintenance Allowance) is 930,98€/ per month, in accordance with the stipends values published by the Foundation for Science and Technology (FCT I.P.) in the country (Annex I – Monthly Stipends Values for the maintenance allowances of the [FCT Regulation for Research Studentships and Fellowships](#)) and Annex II of the Regulation of Scientific Research Fellowships of the University of Minho (RBIC), published in “Diário da República”, 2nd serie, no. 119, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021, according to the applicable regulation.

Payment is made on the 23st of each month, through bank transfer to the Bank Identification Number of the fellow identified in the contractualization process.

**Other benefits:** Reimbursement of Voluntary Social Security (Social Security contributions), corresponding to the 1st level of discounts (*for research grants with a total duration 6 months or higher*) and personal accident insurance.

**Exclusivity regime:** The grantee will perform the activities under exclusivity, as foreseen in article 5º of the Research Fellow Statutes and applicable regulations.

**Selection panel:**

The first effective member will substitute the President of the selection panel in case of impediment, being nominate the first substitute member in the place of the first effective member.

Presidente: Maria Madalena da Cunha Faria de Lira, Prof. Auxiliar do Departamento de Física, membro do CFUM, Escola de Ciência da Universidade do Minho

Effective member: Paulo Rodrigues Botelho Fernandes, Professor Auxiliar no Departamento de Física da Escola de Ciências da Universidade do Minho

Effective member: João Manuel Maciel Linhares, Professor Auxiliar no Departamento de Física da Escola de Ciências da Universidade do Minho

Alternate member: Jorge Manuel Martins Jorge, Prof. Associado do Departamento de Física, Escola de Ciência da Universidade do Minho

Alternate member: António Manuel Queirós Pereira, Prof. Auxiliar com Agregação do Departamento de Física, Escola de Ciência da Universidade do Minho

**Criteria and procedures for applications assessment and selection:** The applications assessment will focus on the candidate's Merit, following evaluation criteria, valued on a scale of 1 to 5 values (or another scale):

Applicant Merit - AM (70%):

- A1-Academic path (considering the classifications of academic degrees), with a weighting of 50%;
- A2-Personal curriculum (considering professional and scientific background), with a weighting of 30%
- A3-Motivation letter, with a weighting of 20%.

The final classification of the applicant's merit with the achieved through the following formula:

$$MC=(A1*0,5)+(A2*0,4)+(A3*0,1)$$

Candidates whose MC classification is lower than 3.00 are excluded, and the remaining candidates go on to the interview phase.

ENT - Interview, with a weighting of 30%

- B.1: Interpersonal skills (30%);
- B.2: Demonstrated knowledge in the contested area (40%);
- B.3: Motivation (20%);
- B.4: Language skills (10%).

The Interview classification (ENT) will be obtained by applying the following formula:

$$\mathbf{ENT = (0.30 B1) + (0.40 B2) + (0.2 B3) + (0.1 B4)}$$

### **CF - Final Classification**

The Final Classification (CF) will be obtained by applying the following formula:

## **CF = 0.70 MCM + 0.30 ENT**

Candidates with a CF lower than 3.00 are excluded.

The academic degrees and diplomas documents, or their respective recognition when awarded by foreign higher education institutions are not mandatory in the application phase, being replaced by a declaration of honor of the candidate with the contents of academic results. The documents of academic qualification or respective recognition will be required in the contracting phase and must attest facts that occurred on a date prior to the application. In situations of divergence between the information contained in the declaration and the documentation submitted for contracting the grant, only the information contained in the latter will be considered. If the documents proving the ownership of the academic degree and diploma, or the respective recognition under the terms of Decree-Law No. 66/2018, of August 16, do not correspond to the classifications awarded in the evaluation of the academic path, which can change the candidate's ranking, the fellowship won't be contracted.

***Notes:** Applicants with degrees obtained abroad must present proof of recognition of qualifications in Portugal and conversion of the final classification obtained in them to the Portuguese classification scale or declaration under the terms indicated in the previous point. Candidates who do not comply with one of these provisions, the selection panel will assign "0" in the grade of the graduation and/or master course. Candidates will be evaluated on the remaining parameters.*

**Disclosure of results:** The provisional results of applications, based in the selection panel minutes, will be sent to the applicants by email until 90 working days from the applications deadline.

If case of unfavourable results, the candidates have a period of 10 working days to comment, if desired, in a prior hearing to interested parties, pursuant to articles 121 and 122 of the Code of Administrative Procedure (DL no. 4 / 2015 of January 7th).

**Complaint and appeal procedures:** The final results of the evaluation will be published through an ordered list (*alphabetically, by final grade obtained*), posted in a visible and public place of the host unit, as well as by email to all applicants, enclosing for that purpose, the minutes of the jury deliberations.

The selected candidate must inform its willingness to accept the grant, in writing. In case of rejection, the fellowship will be awarded to the next candidate in the ordered list of applicants.

The final decision can be contested within 15 working days, by sending to the President of the jury the corresponding claim. Interested parties may also submit an optional hierarchical appeal, addressed to the Pro-Rector for Research and Projects, Professor Sandra Paiva.

**Constitution of a selection reserve list:** The applicants ranked in the next positions on the ordered list will be included in a selection reserve list, which can be used until 06/31/2023

**Application deadline and submission:** The call for applications is open for a period of 10 (ten) working days from the date of publication of the announcement on the Euroaxess portal.

Applications must be formalized by sending an application letter with the following documents: curriculum vitae; qualifications certificate or declaration of the applicant; motivation letter; statement proving that meets the

conditions for the grant typology, according to the application requirements; other documents important to the evaluation process).

Applications must be sent by email to [bolsas@ecum.uminho.pt](mailto:bolsas@ecum.uminho.pt), indicating the reference 27/ECUM/CFUM/2023 of the call for applications in Subject. Applications submitted by other means will not be accepted.

**Fellowship contractualization:** The fellowship will be attributed by signing a fellowship contract between the University of Minho and the fellow, accordingly with the contract minute (annex IV of the Regulation of Research Fellowships of the University of Minho (RBIC), published in *Diário da República, 2nd Série, no. 119*, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021, as indicated in 2.4 of the FCT document: "[Rules for Granting and Management of Grants within the scope of R&D projects, including infrastructure projects, the multi-annual financing program for R&D units and other FCT financing instruments \(Version 2021\)](#)".

The contract may only be concluded after all the documentation required is collected, which must take place within a maximum period of 6 months.

Once all the documentation has been received, the contracting entity has a period of 60 working days to conclude the scholarship contract. Once received, the fellow must return the contract duly signed within 15 working days.

The activities under the fellowship contract can only began after proper authorization by the contracting entity.

**Term and cancellation of fellowship contracts:** Without prejudice to the other causes provided the fellowship regulations (FCT and UMinho) and in the Statute of the Research Fellow, the fellowship ends with the completion of the work plan, as well as with the expiration date for which it was granted or renewed.

At the end of the fellowship, the grantee is obliged to present a Final Report of the work carried out, in accordance with the objectives and evaluation criteria defined with the scientific advisor, within 30 days after the end of the scholarship.

The **final report** must be prepared in accordance with Annex I of the Scientific Research Fellowships Regulation of the University of Minho (RBIC), published in *Diário da República, 2nd Série, no. 119*, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of June 22.

**Note:** The information above required should be submitted in the Euraxess Portal<sup>1</sup>, in the fields reserved for those purposes<sup>2</sup>.

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<sup>1</sup> The USRH acts as administrator of University of Minho – Human Resources profile. After registration of the employee/researcher/teacher as individual user in the Euraxess, the USRH can add the individual user through the email as "member" of the entity "University of Minho", allowing the user to publish the fellowship announcements in the Euraxess Portal.

<sup>2</sup> The FCT ended with the previous validation of the fellowships announcements. The R&D units must strictly follow the Rules for granting and managing research fellowships (2021).